BROOKHAVEN NATIONAL LABORATORY

Worker Safety and Health
Annual Industrial Hygiene Monitoring Plan
FY 2009

1. Purpose

The purpose of the annual industrial hygiene monitoring plan is to establish priorities for industrial hygiene monitoring during the upcoming year. BNL is continuing our monitoring scheme for FY2009 to assess, document and monitor worker exposures. This document, in conjunction with the Compliance Suite exposure monitoring database and the IH Scheduler, sets the foundation for prioritizing IH Monitoring at BNL.

~~Monitoring p~~Priorities are based on regulatory compliance, a need for quantitative hazard evaluation data, and the estimated risk of hazards. The IH Group at BNL continues to conduct interviews with each directorate to identify, through discussions with line management, areas of concern for monitoring.

~~IH Baseline monitoring has been completed and represents a single monitoring event on all operations at BNL. During the first quarter of FY09, the reported results and hazard analyses provided by our FY07-08 IH Baseline Monitoring consultant will be reviewed.~~

Monitoring requirements recommended by the consultant will be added/updated in the IH Scheduler. ~~Where t~~The consultant has analyzed activities, through ESR reviews and monitoring reports, and where they determined a reduced schedule or elimination of monitoring, these items will be identified for alteration or removal from the IH Scheduler.

2. FY08 Accomplishments

IH Baseline monitoring has been completed and represents a single monitoring event for each operation at BNL. During the first quarter of FY09, the reported

results and hazard analyses provided by our FY07-08 IH Baseline Monitoring consultant will be reviewed.

During FY08, BNL conducted a special project to determine levels of airborne asbestos fibers provide air monitoring in occupied spaces throughout the Lab.

3. IH Monitoring Goal Setting

The primary goals for FY09 are:

- Continued implementation of the IH Scheduler
- Verification monitoring and rank reassessment for post Baseline monitoring and
- Documentation in Compliance Suite for verifying exposure potentials through statistical analysis of sample data.

To establish the goals, the following criteria are used:

- Compliance with regulatory (OSHA/DOE) standards/guidance
- Relative risk to worker and assignment of Similar Exposure Groups
- Needs of the Department/Directorate
- Special Emphasis programs identified by the IH Group

Goals for the FY2009 plan are determined using the following inputs: IH and ESH coordinator staff discussions; a review of hazard assessments from the Baseline monitoring; a review of chemical inventories; a review of worker concerns; anticipated and known worker exposures. Additional information is gathered through reviews of: recent accidents/injuries; recent OSHA/DOE inspection findings; lessons learned; and assessment of need by departments.

4. Prioritization of Monitoring Strategies for Specific Stressors

IH stressors at BNL include: asbestos, beryllium, cadmium, carcinogens, chemicals, heat/cold stress, lead, noise, non-ionizing radiation, reproductive hazards, silica, and welding. Additional stressors might include areas such as ergonomics. However, these areas are not part of this monitoring strategy.

Priority stressors have been established and will be the focus of IH monitoring throughout FY2009. The top four priorities for BNL lab-wide this year are:

- Noise – personal dosimetry [priority criteria: BNL has identified personnel injury issues]

- Silica – [priority criteria: OSHA National Emphasis Program (CPL 03-00-007) effective date 1/24/08]
    - In 1996, the Occupational Safety and Health Administration (OSHA) issued a memorandum establishing a Special Emphasis Program (SEP) for Silicosis, which provided guidance for targeting inspections of worksites with employees at risk of developing silicosis. This instruction establishes a National Emphasis Program (NEP) that expands and builds upon the 1996 SEP.
    - The PEL is adjusted using the conversion factor of 0.1 mg/m3 per 1 million particles per cubic foot (mppcf).

- Particularly Hazardous Chemicals
    - carcinogens (especially Cr+6; priority criteria OSHA reduction in PEL)
    - reproductive toxins - special consideration to storage/designated areas
    - chemicals used in large quantities

- Non-Ionizing Radiation – (all unmonitored & modified sources; or when monitoring >4 years ago)

- Other IH issues of high concern
    - ~~flammable chemical storage and compatibility~~
    - hazardous metals in laboratory settled dust

The priority stressors for each department will vary. Each department has a different set of IH stressors due to the type of activities they conduct. For any department that does not have one or more of the BNL priority stressors noted above, the Safety and Health Representative will determine the next highest need based on a hazard ranking scheme as described below.

4. Exposure Characterization, Hazard Ranking and Sampling Frequency

The Compliance Suite IH module is currently the single electronic source for IH monitoring data. All IH monitoring samples are documented in the database with specific information pertaining to the samplinges event. This tool documents the rank for monitoring events to establish the frequency for future sampling events based on the rank profile.

Exposure Assessments (EA)

This monitoring plan uses the following EA strategy:

Qualitative Exposure Assessment	Hazard Characterization	Need determined primarily through Work Planning; review of existing data; area monitoring (ex. Noise); and ESH coordinator input
	Scope/Screen for exposure potential	
	Analyze and Interpret Results	
	Prevention and Controls	
Quantitative Exposure Assessment	Develop quantitative Monitoring Plan	Annual IH Monitoring Plan based on review of analytical data and interpretive reports.
	Conduct Exposure Monitoring	
	Determine need for and periodicity of re-evaluations	
Medical Monitoring	Review with OMC exposure and medical data as required; re-monitor as necessary	Data is input to Compliance Suite for OMC review and OMC is on IH report distribution list.

In some instances, BNL will provide non-monitoring, qualitative assessments. This type of assessment would include: exposures to items that do not have regulatory OELs or methods for monitoring and analysis such as biological materials/organisms and pesticides; and theoretical assessments based on a quantitative analysis of the exposure potential.

Examples of hazard assessments based on exposure potential might include the use of extremely small quantities.

For instance, a S&H representative may determine through calculations that if all of the material were instantaneously aerosolized the airborne level would be below 10% of the OEL and ventilation would lessen exposures further. In this instance, there is essentially very low risk of overexposure.

Hazard assessments from the Baseline Monitoring have shown very low exposure potential using small quantities of volatile chemicals when manipulated in an approved, chemical fume hood. This represents very low risk of overexposure.

Ranking Exposure Monitoring Data

The following criteria are used by the Safety and Health Representative to establish the exposure ranking and set the monitoring schedule:

Risk Category	Exposure Level	Relative Risk	Frequency of Monitoring
A	Worker exposure exceeds OEL on TWA_8	Significant risk	All workers in SEG during each job until PPE requirements characterized, then all workers quarterly
B	Area exposure level exceeds OEL but worker exposure is $<TWA_8$ based on duration in area	May be at significant risk. Needs further evaluation: compliance with OEL uncertain	25% of workers in SEG, quarterly
C	Area/worker exposure is >10% of OEL to OEL level	Moderate risk	10% of workers once per year
D	Area/worker exposure <10% of OEL.	Low risk	1 representative sample per year for three years, then one sample per 3 year cycle
U	Unknown area/personal exposure	Risk assigned on best available guidance	Sample on next operation(s) until characterized as A-D

BNL will use 10-25% of the OEL as the Administrative Control Limit (ACL). This will be confirmed or changed as needed by continual review of monitoring data and hazard analyses as they become available. The ACL is not to be viewed as a modified OEL but rather as a level for decision making with respect to regulatory compliance and for determining the need for additional monitoring.

The IH monitoring data will be reviewed by a Senior Industrial Hygienist and incorporated into exposure assessments (EAs). The EAs will be integrated into the existing programs, experiments and operations. The IH Monitoring Plan will be reviewed and updated on an annual cycle by the IH Group manager.

Authorized and Approved By:

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Author Name	Signature (on file)	Date
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Approval	Signature (on file)	Date